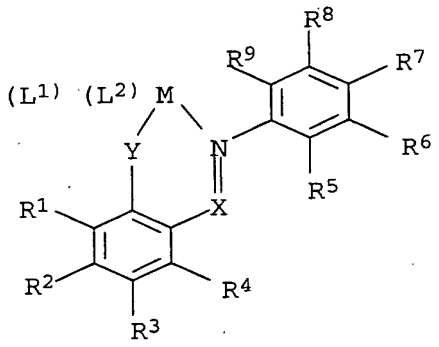
We claim:

1. A process for preparing aqueous polymer dispersions by polymerizing one or more olefins in an aqueous medium in the presence of dispersants and, if desired, of organic solvents which comprises catalyzing the polymerization of said olefin(s) using one or more metal complex compounds of the formula I



I

where the substituents and indices have the following meanings:

M is a transition metal from groups 7 to 10 of the periodic table of the elements,

L^1 denotes phosphanes $(R^{16})_xPH_{3-x}$ or amines $(R^{16})_xNH_{3-x}$ with identical or different radicals R^{16}, ethers $(R^{16})_2O$, H_2O, alcohols $(R^{16})OH$, pyridine, pyridine derivatives of the formula $C_5H_{5-x}(R^{16})_xN$, CO, C_1-C_{12} alkylnitriles, C_6-C_{14} arylnitriles or ethylenically unsaturated double bond systems, x denoting an integer from 0 to 3,

L^2 denotes halide ions, amide ions $(R^{16})_hNH_{2-h}$, h denoting an integer from 0 to 2, and also C_1-C_6 alkyl anions, allyl anions, benzyl anions or aryl anions,

it being possible for L^1 and L^2 to be linked to one another by one or more covalent bonds,

X: is CR or nitrogen atom (N)

R: is hydrogen,
C_1-C_6 alkyl groups,
C_7-C_{13} aralkyl radicals or
C_6-C_{14} aryl groups, unsubstituted or substituted by one or more C_1-C_{12} alkyl groups, halogens, mono- or polyhalogenated C_1-C_{12} alkyl groups, C_1-C_{12} alkoxy groups, silyloxy groups $OSiR^{11}R^{12}R^{13}$, amino groups $NR^{14}R^{15}$ or C_1-C_{12} thioether groups,

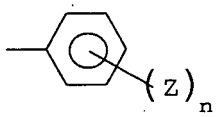
Y: is OH group, oxygen, sulfur, N-R^{10} or P-R^{10},

N: is nitrogen atom

R^1 to R^9: are independently of one another
hydrogen,
C_1-C_{12} alkyl, it being possible for the alkyl groups to be branched or unbranched,
C_1-C_{12} alkyl substituted one or more times by identical or different substituents selected from C_1-C_{12} alkyl groups, halogens, C_1-C_{12} alkoxy groups and C_1-C_{12} thioether groups,
C_7-C_{13} aralkyl,
C_3-C_{12} cycloalkyl,
C_3-C_{12} cycloalkyl substituted one or more times by identical or different substituents selected from C_1-C_{12} alkyl groups, halogens, C_1-C_{12} alkoxy groups and C_1-C_{12} thioether groups,
C_6-C_{14} aryl,
C_6-C_{14} aryl substituted by identical or different substituents selected from one or more C_1-C_{12} alkyl groups, halogens, mono- or polyhalogenated C_1-C_{12} alkyl groups, C_1-C_{12} alkoxy groups, silyloxy groups $OSiR^{11}R^{12}R^{13}$, amino groups $NR^{14}R^{15}$ and C_1-C_{12} thioether groups,
C_1-C_{12} alkoxy groups,
silyloxy groups $OSiR^{11}R^{12}R^{13}$,
halogens,
NO_2 groups or
amino groups $NR^{14}R^{15}$,
it being possible in each case for two adjacent radicals R^1 to R^9 to form with one another a saturated or unsaturated 5- to 8-membered ring,

R^{10} to R^{16} independently of one another are
hydrogen,
C_1-C_{20} alkyl groups, which may be substituted in turn by $O(C_1$-C_6 alkyl) or $N(C_1$-C_6 alkyl)$_2$ groups,
C_3-C_{12} cycloalkyl groups,
C_7-C_{13} aralkyl radicals or C_6-C_{14} aryl groups,

at least one of the radicals R^1 to R^9 necessarily being in the form of a radical of the formula II below



II

where Z is an electron-withdrawing group and n is an integer from 1 to 5.

2. A process as claimed in claim 1, wherein Z in formula II is one of the following electron-withdrawing radicals:

NO_2, SO_3, F, C_mF_{2m+1} where m is an integer from 1 to 10, or a mono- or polyfluorinated aryl.

3. A process as claimed in either of claims 1 or 2, wherein Z in the formula II is CF_3 and n is 2 or 3.

4. A process as claimed in any of claims 1 to 3, wherein the metal complex compound is used in combination with an activator.

5. A process as claimed in any of claims 1 to 4, wherein M in the formula I is nickel or palladium.

6. A process as claimed in any of claims 1 to 5, wherein ethylene is used exclusively as olefin.

7. A process as claimed in any of claims 1 to 5, wherein at least two olefins are used selected from the group consisting of ethylene, propylene, 1-butene, 1-hexene, and styrene.

8. A process as claimed in claim 6, wherein ethylene is used in combination with propylene, 1-butene, 1-hexene or styrene.

9. A process as claimed in any of claims 1 to 8, wherein anionic, cationic and/or nonionic emulsifiers are used as dispersants.

10. A process as claimed in any of claims 1 to 9, wherein aliphatic and aromatic hydrocarbons, fatty alcohols or fatty acid are used as organic solvents.

11. An aqueous dispersion of a polyolefin or copolymer of two or more olefins, obtainable by a process as claimed in any of claims 1 to 10.

12. An aqueous dispersion of a polyethylene or copolymer of ethylene obtainable by a process as claimed in any of claims 1 to 10.

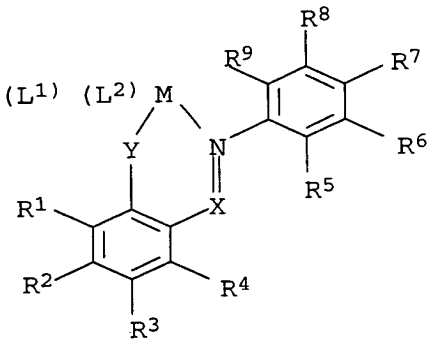
13. An aqueous dispersion as claimed in claim 11 or 12 in the form of a miniemulsion.

14. The use of an aqueous dispersion as claimed in any of claims 11 to 13 for paper applications such as paper coating or surface sizing, paints and varnishes, adhesive base materials, molded foams such as mattresses, textile and leather applications, carpet-backing coatings or pharmaceutical applications.

Preparation of aqueous polymer dispersions

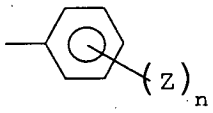
Abstract

A process for preparing aqueous polymer dispersions by polymerizing one or more olefins in an aqueous medium in the presence of dispersants and, if desired, of organic solvents comprises catalyzing the polymerization of said olefin(s) using one or more metal complex compounds of the formula I



I

where at least one of the radicals R^1 to R^9 is necessarily in the form of a radical of the formula II below



where Z is an electron-withdrawing group and n is an integer from 1 to 5.